

## 3 Residential

### 3.1 Introduction

Several activities associated with residential development are possible contributors ~~to~~ of elevated nitrate in ground water problems.

The combination of the activities listed below, makes dense, residential areas a potentially important localized source of nitrate contamination in ground water.

- Septic systems system location and poor maintenance
- Well location, construction and poor or improper maintenance
- Landscaping (lawns and gardens):
  - Excessive or improperly-timed fertilization
  - Overwatering
  - Improper management of small acreage agricultural/livestock operations

Twin Falls County issues building and subdivision permits and encourages other government agencies to review and comment when there are ground water issues that need to be addressed by the county. Minimum lot size for a domestic well and septic system is one acre.

Comment [KE1]: Do we know when this is? Like when they are in an NPA?

Before the housing crisis in 2008, Twin Falls County was in an extreme growth period processing 37 subdivision application during the period 2006-2008 equaling 480 lots. After the housing collapse, 180 lots were taken out of development leaving 300 lots. Since then the county has maintained a growth rate of about three subdivision applications per year.

### 3.2 Septic Systems

The standard household septic system is not designed to effectively treat wastewater for nitrates. Annual mass nitrate loading is approximately 30 pounds per household septic system. In low-density settings, the impact to the ground water is low because of dilution by the ground water and the small volume of discharge spread over a large area. As the housing density increases, the combined discharge volume increases, thus overcoming the soil's ability to treat the wastes and the ground water's ability to dilute the volume. In some areas of Twin Falls County where higher concentrations of nitrate are found, the density of septic systems may exceeds the dilution capabilities of the ground water and higher levels of nitrate are found. Septic system failures generally occur in improperly maintained systems, unused systems, or older systems that predate current rules or because the system is not used or maintained properly. As septic systems fail, they will need to be replaced to current standards as regulated by the South Central Public Health District.

Comment [KE2]: How is this defined? One per 5 acres? One per acre?

#### 3.2.1 Recommended Management Practices for Septic Systems

The key to making sure septic systems are not a source of pollution is proper design and maintenance. Good construction, operation and maintenance should result in a long-lived properly functioning system. Setbacks and other requirements for the design, construction, siting, and use of individual and subsurface sewage disposal systems are found in

Comment [IN3]: I think we should consider adding a section in the front that lists agency acronyms that will be used throughout the document.

Comment [KE4]: Probably a good idea

the Individual/Subsurface Sewage Disposal Rules (IDAPA 58.01.03).  
<https://adminrules.idaho.gov/rules/current/58/0103.pdf>

The following are recommended septic system management practices:

- ~~New housing developments:~~
  - ~~Developers and South Central Public Health District should continue to evaluate and improve the current Nutrient-Pathogen Study requirements.~~
  - ~~Appropriately size the system with a tank that is large enough to hold at least two days of waste flow.~~
  - ~~An appropriate lot has sufficient room for a tank, drainfield, and one replacement drainfield area.~~
  - ~~The site should be evaluated for suitable topography, soils, and ground water protection.~~
  - ~~Individuals should have their system inspected by a licensed professional at least every 3 years, and pumped every 3-5 years.~~
  - ~~Based on results of a professional inspection, individuals should replace or upgrade their systems per current regulatory standards.~~
  - ~~Materials that should not be flushed into your system: food, fibers, toxic chemicals, old medicines.~~

For local governments, the following are recommendations that mitigate septic system impacts:

- ~~Growth should be encouraged in areas adjacent to municipal sewer access.~~
- ~~It may be beneficial for Organizations-organizations such as Homeowners Associations or HOAs should be formed within the development to oversee the maintenance of community septic systems.~~
- ~~Existing housing developments:~~
  - ~~Governmental departments are encouraged to review the impacts on area ground water impacts and to require mitigation where necessary.~~

### 3.2.2 Technical Assistance for Septic Systems

South Central Public Health District and DEQ distributes septic tank maintenance system handouts, which include information on how to maintain, and thereby extend the useful life of, the system and minimize ground water impacts. Technical guidance is also available. For more information go to the SCPHD website <https://phd5.idaho.gov/>

- ~~South Central Public Health District personnel continue to work with developers to improve the Nutrient-Pathogen study process.~~
- ~~City and county departments are in the process of developing a long-term municipal sewer system plan.~~

Field Code Changed

### 3.3 Wells—Construction, Location, and Contamination

According to IDWR, Twin Falls County is one of the top five Idaho counties for the number of wells drilled. An estimate of the total number of wells located in the county exceeds 5000, which are primarily private, domestic wells. In 2016, 474 well drilling permits were issued wells were drilled in the county. Figure 1 shows well drilling activity in the county since 2009.

Proper well construction is important for protecting ground water quality. Contaminated water moving down a well casing from the land surface to ground water or moving between aquifers via well bores, could contribute to the nitrate contamination problem ~~elevated nitrate concentrations in ground water~~. Many individual wells in the county were constructed before current requirements came into effect. Poor or older well construction, including shallow annular seals or improperly sealed wells, can facilitate water movement, possibly carrying contaminants from the land surface to the ground water or between aquifer units.

~~Locating a~~ Septic systems or other contamination sources ~~too close~~ less than 100 feet (current standard) or up gradient from a poorly sealed well may cause the well to capture contaminated water and allow contaminated water to move further into the aquifer or between aquifers.

### 3.3.1 Recommended Practices for Well Construction, Location, and Contamination

- Owners of existing wells:
  - \* ~~Annually inspect the well casing and seals~~ visible portions of the well for obvious signs of deterioration or leakage, to ensure that no leakage is occurring.
  - \* If a well is modified, consideration should be given to bringing it up to current construction standards where possible.
  - \* Improve the construction if the well has an inadequate (shallow) or compromised seal or casing. The current required depth for both the well casing and annular seal is 38 feet below land surface.
  - \* Test the well water annually for fecal coliform, total coliform, E. coli and nitrate and arsenic.
  - \* Store liquid and solid ~~contaminates~~ contaminants at least 50 feet away from wellheads or provide barriers (e.g. double containment) to prevent well contamination.
  - \* When using chemigation, provide back-flow prevention devices to prevent contamination of the well and ground water through back siphoning of chemigation tanks.
  - \* Casing should extend at least 1 foot above the ground and the land surface should slope away from the wellhead.
- Owners and drillers of new wells:
  - \* ~~Case and seal the well a minimum of 50~~ Wells should be cased and sealed to a minimum depth of 38 feet below land surface, at least through the first clay or water-bearing strata, with a solid casing (not slotted pipe or screens).
  - \* Where possible, IDWR recommends
- Local officials:
  - \* Pass regulations that will require all wells to comply with current guidelines.

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Comment [KE5]: Should there be an "or" option?? Just curious.

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Comment [IN6]: Where to add new seal depth rule change and drilling activity bar graphs?

Comment [IN7]: Add recommendations for areas where no protective clay layer occurs such as unconfined aquifer in fractured basalt?

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Comment [KE8]: Missing something??? Or needs to be deleted.

Comment [IN9]: Clinton can finish this sentence

### 3.3.2 Technical Assistance for Well Construction, Location, and Contamination

Idaho Department of Water Resources, DEQ and South Central Public Health District are ~~both~~ all involved in the following tasks:

- Develop and distribute information to well drillers and the public about the ground water contamination concerns.

- Outline the need to construct and repair wells to prevent possible contamination from the surface.
- Highlight the need to encourage repair of wells that are connecting co-mingling aquifers so cross-contamination of aquifers does not occur.
- Provide information about well-testing and disinfecting a domestic well.

The National Groundwater Association features a website devoted specifically to private well owner education and assistance: [www.wellowner.org](http://www.wellowner.org)

### 3.4 Landscaping, Lawns, and Gardens

Activities associated with landscaping or lawn and garden care have the potential to have adverse impacts on the environment, if not done with proper knowledge and care. People need to understand the nature of their landscape, lawn or garden problem before attempting to solve the problem. To do this, they should seek help, advice and information from knowledgeable professionals. In many cases, applying additional fertilizer or water will not solve the plant health problem, but may deliver additional nitrate to the ground water.

Comment [KE10]: Feel like this should start with a more neutral statement.

Sustainable landscaping that is in harmony with the sagebrush steppe ecosystem, dominant in the Snake River Plain, is important in addressing both water quantity and quality concerns in the Magic Valley. The City of Twin Falls is considering a proactive program to provide incentives for water conservation and xeriscaping.

#### 3.4.1 Recommended Management Practices for Lawns and Gardens

- Residents:
  - Apply fertilizers per label instructions. Fertilizers applied at greater than recommended rates can lead to a nitrogen build-up and/or imbalance of nutrients in the soil profile. Given enough water, these nutrients are then available to leach to ground water.
  - Provide only that amount of water needed to maintain a healthy landscape, lawn or garden. Over-watering tends to drive available nutrients below plant roots. These nutrients easily find their way to ground water as additional water is applied or precipitation occurs. This situation also leads residents to use additional fertilizer to replace the nutrients washed below the root zone.
  - Apply fertilizer and water in amounts and at the right times which do not contribute to nitrate leaching. Over-watering right after certain fertilizer applications can immediately wash nutrients past the root zone making them unavailable for plant uptake and a threat to ground water quality.
  - Backflow prevention assemblies are required in all cities with public water systems and are recommended for all private wells on a sprinkler system.
- Developers:
  - Whenever possible, supply pressurized canal irrigation systems for landscaping use, whenever possible.
  - The current requirement is that a lot ¼ acre or larger requires pressurized irrigation connection.

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- Put less turf grass in landscaping designs, use native and drought-tolerant or low-water vegetation where possible, consider adding xeriscaping to design options, construct rain gardens as part of the natural landscaping.
- City Officials:
  - Consider adding amending or adding sustainable landscaping practices to ordinances or design requirement, where possible.
  - Offer incentives for water-wise landscape design
  - Require xeriscaping at all city buildings
  - Develop a demonstration garden for the public with drought-tolerant and/or low-water plants and xeriscaping and rain garden ideas to serve an education/awareness tool.

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Comment [KE11]: Just my ideas.

### 3.4.2 Technical Assistance for Landscaping, Lawn, and Garden

- Home\*A\*Syst program, coordinated by the Idaho Association of Soil Conservation Districts, provides information on environmental and health issues around the home.
- Master Gardener program, coordinated by the The University of Idaho Cooperative Extension system office provides information and assistance on a variety of landscaping issues. It also organizes and develops information to properly maintain landscaping, lawns and gardens to prevent leaching nutrients to the ground water as part of its Master Gardener program.

Comment [KE12]: There has to be more resources. EPA has "Water Sense" website.

Comment [IN13]: This program is no longer coordinated by ISDA and as far as I know no one picked it up. I called the U of I Extension to propose that they take it over and they referred me to Ariel Agenbroad in the Ada County Extension office. She seemed somewhat interested but haven't heard anything back yet.

## 3.5 Managing Livestock on Small Acreages

The generic term "livestock operation" refers to any lot or facility which contains animals. Idaho Statute (section 67-6529c, Idaho Code), boards of county commissioners and other governmental agencies determine whether a site is to be categorized as:

- Confined Animal Feeding Operation (CAFO)
- Animal Feeding Operation (AFO)
- Small Acreage

Comment [IN14]: How does the county categorize and/or regulate small acreages?

"Small Acreage" and smaller "animal feeding operations" are not subject to as high a level of regulation as CAFOs. It is the owner's responsibility to learn what requirements apply to their particular situation.

Comment [IN15]: We could consider a separate "County" section and/or consider moving this subsection to the Livestock Section?

Comment [KE16]: Agreed. Seems to still deal with animals.

Regardless of the category, the result may be a surplus of manure in a pasture. When irrigation or precipitation occurs, nutrients accumulated on the surface may leach through the soil to the ground water. This is especially likely to happen when ground is:

- Low-lying
- Frozen

Regardless of size, all pastures have their own unique "carrying capacity" (the number of animals the acreage can support). Exceeding the carrying capacity of a pasture can enable animals to overgraze grasses. This reduces the plant's ability to utilize manure for growth and increases the risk of leaching.